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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/559,273	04/27/00	UEMURA T	PM 270586

EXAMINER	
NGUYEN, T	
ART UNIT	PAPER NUMBER
2815	

DATE MAILED:
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000909
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MM91/1024

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/559,273	UEMURA ET AL.	
	Examiner	Art Unit	
	Joseph Nguyen	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) *13-26* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 April 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Election/Restrictions

Applicant's election of species represented by figures 2, 3 and 8, drawn to claims 1-10, 12, 14,15,17,19-22 and 24 in Paper No. 8 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). However, claims 14, 15, 17, 19-22 and 24 identified as readable on the species of figures 2, 3 and 8 is not consistent with the disclosure. For instance, claim 14 specifically defines a 3rd positive electrode layer, but none of figures 2, 3 and 8 shows this layer. Therefore, claims 14, 15, 17, 19- 22 and 24 are hereby withdrawn from consideration since they do not read on the elected species.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by Shibata et al. ✓

Regarding claim 1, Shibata et al disclose on figures 1 and 2 a light emitting semiconductor device comprising " a substrate [1]; group III nitride

compound semiconductor layers formed on said substrate; and a positive electrode [8A] including at least one layer [readable on figure 2B] of a first positive electrode layer which is formed on or above a p –type semiconductor layer [7] and reflects light toward said substrate, said first positive electrode layer being made of at least one of platinum (Pt), palladium (Pd) [col. 5, lines 52-55]".

Regarding claim 2, Shibata et al disclose on figures 1 and 2 the positive electrode 8A has a multi-layer structure 81, 82 made of a plural kinds of metals.

Claims 1 and 2 are rejected under 35 U.S.C. 102(a) as being anticipated by Kondoh et al (Integrated Photonics Research).

Regarding claim 1, Kondoh et al disclose on figure 2 a light emitting semiconductor device comprising " a substrate; group III nitride compound semiconductor layers formed on said substrate; and a positive electrode including at least one layer [Ag] of a first positive electrode layer which is formed on or above a p –type semiconductor layer and reflects light toward said substrate, said first positive electrode layer being made of at least one of Ag ".

Regarding claim 2, Kondoh et al disclose on figure 2 the positive electrode has a multi-layer structure Ag, Ni, Au made of a plural kinds of metals.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3, 4, 5, 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al or Kondoh et al as applied to claim 1 above, and further in view of Yanagihara et al.

Regarding claims 3 and 4, Shibata et al or Kondoh et al disclose substantially all the structure set forth in the claimed invention except a first thin film metal layer made of cobalt, nickel or alloy of one of these metals, formed between the p type semiconductor layer and the first positive electrode layer. However, Yanagihara et al disclose on figure 2C a first thin film metal layer 4 made of cobalt, nickel or alloy of one of these metals, formed between the p type semiconductor layer 2 and the first positive electrode layer 6. In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Shibata et al or Kondoh et al by having a first thin film metal layer made of cobalt, nickel or alloy of one of these metals, formed between the p type semiconductor layer and the first positive electrode layer for the purpose of providing a low contact resistance between the ohmic electrode and the p type semiconductor layer as taught by Yanagihara et al (col. 3, lines 55-60).

Regarding claims 5 and 6, Yanagihara et al disclose a thickness of the first thin film metal layer 4 is in the range of 2A to 200A (col. 5, lines 61-62).

Regarding claim 12, Shibata et al or Kondoh et al disclose substantially all the structure set forth in the claimed invention except the second positive electrode layer made of at least one of gold or an alloy including gold and formed on the first positive electrode layer. However, Yanagihara et al disclose on figure

2C the second positive electrode layer is made of at least one of gold or an alloy including gold and formed on the first positive electrode layer (col. 6, line 20-22). In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Shibata et al or Kondoh et al by having the second positive electrode layer made of at least one of gold or an alloy including gold and formed on the first positive electrode layer for the purpose of reducing the resistance of the electrode as taught by Yanagihara et al (col. 6, lines 20-22).

Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al or Kondoh et al and Yanagihara et al and further in view of Neumann et al.

Regarding claims 7 and 8, Shibata et al or Kondoh et al and Yanagihara et al disclose substantially all the structure set forth in the claimed invention except the second thin film metal layer made of at least one of gold and an alloy including gold. However, Neumann et al disclose on figure 1 the second thin film metal layer 5 made of at least one of gold and an alloy including gold (col. 3, line 27). In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Shibata et al or Kondoh et al and Yanagihara et al by having the second thin film metal layer made of at least one of gold and an alloy including gold for the purpose of providing a highly desirable, good ohmic contact as taught by Neumann et al (col. 3, lines 26-29).

Regarding claims 9-10, Yanagihara et al disclose on figure 2C a thickness of the second thin film metal layer 5 is in the range of 10A to 500A (col. 5, lines 61-62).

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent 4268849 to Gray et al disclose that a bonding pad structure for an LED.

US Patent 5412249 to Hyugaji et al disclose a layered electrode having a contact with the p-type region.

US Patent 6268618B1 to Miki et al disclose that the light permeable electrode having a multi layer structure.

US Patent 6169297B1 to Jang et al disclose that a metal thin film with an ohmic contact for LEDs.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (703) 308-1269. The examiner can normally be reached on Monday-Friday, 7:30 am- 4:30 pm

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned is (703) 308-7382 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JN
October 17, 2001

EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800